Puget Sound Action Team

Successes & Challenges

of the *2001-2003 Puget Sound Water Quality Work Plan*

Puget Sound Action Team

The Action Team has 17 members: a city and a county representative; a representative of federally recognized tribes; ex-officio representatives of three federal agencies; the heads of 10 state agencies involved in carrying out the *Puget Sound Water Quality Management Plan* and a chair appointed by the Governor. The Action Team:

- Develops a biennial work plan and budget.
- Periodically amends the *Puget Sound Water Quality Management Plan.*
- Coordinates the monitoring and research programs.
- Coordinates implementation of the *Puget Sound Water Quality Management Plan.*

Scott Redman, Acting Chair

*__Ken Berg, Manager,__ U.S. Fish and Wildlife Service

Martha Choe, Director, Department of Community, Trade and Economic Development

Mark Clark, Executive Director, Washington State Conservation Commission

Rex Derr, Director, Parks and Recreation Commission

Laura E. Johnson, Director, Interagency Committee for Outdoor Recreation

Tom Fitzsimmons, Director, Department of Ecology

Jeffrey Koenings, Director, Department of Fish & Wildlife

*__Ron Kreizenbeck,__ Deputy Regional Administrator, Environmental Protection Agency

*__Bob Lohn,__ Regional Administrator, National Marine Fisheries Service

Valoria Loveland, Director, Department of Agriculture

Doug MacDonald, Secretary, Department of Transportation

Joan McGilton (Representing city government), Burien City Council

Francea McNair, Aquatics Steward, Department of Natural Resources

Dan McShane, (Representing county government) Whatcom County Council

Mary Selecky, Secretary, Department of Health

Daryl Williams, (Representing tribal government) Director, Department of the Environment, Tulalip Tribes

* Non-voting member

Puget Sound Council

The Council has 12 members: seven appointed by the governor and four legislators. The Chair of the Action Team also chairs the Council. The Council:

- Advises the Action Team on work plan projects and activities, and on coordination with other state and local activities.
- Reviews progress on implementation of the work plan.
- Recommends changes to the *Puget Sound Water Quality Management Plan,* as needed.
- Tracks the progress of state agencies and local governments in implementing the work plan.

Scott Redman, Acting Chair

Jackie Aitchison (Representing city government) Poulsbo City Councilmember

Kirk Anderson (Representing business) Fisher Communications, Inc.

Bill Dewey (Representing the shellfish industry) Taylor Shellfish Co., Inc.

*__Senator Tracey Eide__ (D-Federal Way) Washington State Senate

Rhea Miller (Representing county government) San Juan County Commissioner

Tom Putnam (Representing the environmental community) Puget Soundkeeper Alliance

*__Senator Pam Roach__ (R-Auburn) Washington State Senate

*__Representative Phil Rockefeller__ (D-Kitsap County) Washington State House of Representatives

*__Representative Mark Schoesler__ (R-Ritzville) Washington State House of Representatives

Jerry Van der Veen (Representing agriculture) Van der Veen Dairy

Frances Wilshusen (Representing tribal governments) Northwest Indian Fisheries Commission

* Non-voting member

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December 30, 2002

TO: Members of the Washington State Legislature:

I am pleased to provide you with this report on the successes and challenges observed to date in carrying out the *2001-2003 Puget Sound Water Quality Work Plan*. This report is provided to you in accordance with section 90.71.020(2)(l) of the revised code of Washington.

Puget Sound is a treasured part of Washington State. Two years ago, the legislature passed and the governor signed an operating budget that included nearly $31 million to protect and restore Puget Sound's water quality and biological health and diversity. This investment is beginning to show some handsome returns.

Between July 1, 2001 and June 30, 2002, agencies with assigned tasks in the *2001-2003 Puget Sound Water Quality Work Plan* accomplished significant results, including:

- Partner agencies identified a preferred option for a multi-user site to dispose of an estimated 10 million cubic yards of highly contaminated sediments expected to be dredged over the next 20 years.
- Tribal, federal, state and local governments and private organizations protected more than 8,000 acres and restored more than 1,700 acres of key nearshore habitat.
- The Washington Department of Fish and Wildlife created three marine preserves to help reverse declines in rockfish populations.
- The Washington Department of Health upgraded 2,545 acres of commercial shellfish harvest areas compared to 407 acres downgraded.
- The Washington Department of Transportation constructed $15.3 million worth of stormwater facilities along the state highway system in the Puget Sound basin.
- The Puget Sound Action Team (Action Team) contributed almost $400,000 to community-based education and leveraged another $226,000 for 12 projects in the basin and funded more than 25 projects to implement the work plan totaling more than $200,000.

- Partner agencies collected, analyzed and summarized key information on the biology, contamination and physical environment of Puget Sound.

The *2001-2003 Puget Sound Water Quality Work Plan* has built a solid foundation upon which more successes can be accomplished in the future, although a number of challenges remain for the Action Team. Many of the challenges are addressed through actions identified in the *2003-2005 Puget Sound Water Quality Work Plan*, which was delivered in a separate mailing to the appropriate committees of the Washington State legislature.

I invite you to use this report to learn about some of the positive strides being accomplished for Puget Sound with current state funding and, also, to learn about the challenges to protecting and restoring Puget Sound. I encourage you to contact me if you would like additional information about our evaluation of recent efforts to protect and restore Puget Sound or about the Action Team's proposed work program for the 2003-2005 biennium.

Thank you for your support.

Sincerely,

Scott Redman
Acting Chair

Puget Sound Action Team

Successes & Challenges

of the *2001-2003 Puget Sound Water Quality Work Plan*

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- **Stormwater on roadway**—Action Team
- **Shoreline**—Action Team
- **Copper Rockfish**—Wayne Palsson
- **Septic system repair**—Action Team
- **Dredging barge**—Mohsen Kourehdar, Washington State Department of Ecology
- **Shellfish harvesting**—Taylor Shellfish Farms

Table of Contents

Introduction

In June 2001, the Washington State legislature appropriated nearly $31 million to undertake the activities specified in the *2001-2003 Puget Sound Water Quality Work Plan.* This funding allows 10 state agency members of the Puget Sound Action Team (Action Team), two state university programs, and the Action Team support staff to continue their long-term efforts to protect and restore Puget Sound according to the vision expressed in the *2000 Puget Sound Water Quality Management Plan.*

This report describes some of the successes and challenges from the first year of implementing the *2001-2003 Puget Sound Water Quality Work Plan.* Progress reports submitted to the Action Team and stories that Action Team staff have gathered from around the Sound provide evidence of many successes of Action Team agencies, university programs, the Action Team support staff, and their partners from July 2001 to June 2002. These sources also identify difficulties in, and obstacles to, implementing the actions of the work plan.

The tasks identified in the *2001-2003 Puget Sound Water Quality Work Plan* are part of a comprehensive effort by federal, tribal, state and local governments to protect and restore Puget Sound. Aspects of this effort that are not specifically identified in the work plan—including efforts to manage growth and development, to recover endangered or threatened species and to undertake watershed planning to protect water quality and quantity in Puget Sound's river basins—are important to the future condition of Puget Sound and its biological health and diversity but are beyond the scope of this report.

The Action Team submits this report to the legislature in advance of the 2003 legislative session—in accordance with RCW 90.71.020(2)(l)—to help legislative decision-makers understand the types of progress that the Puget Sound community is making to protect and restore Puget Sound. This report also highlights some of the institutional, environmental, and fiscal challenges that confront the agencies, local governments, and other partners engaged in this work.

This report complements the *2003-2005 Puget Sound Water Quality Work Plan*, which is also submitted to the legislature in December 2002 and which lays out the Action Team's proposed work program for the coming biennium. Where possible, the 2003-2005 work plan provides the means for implementing some of the next steps identified in this report.

The bulk of this report presents the successes, challenges and suggested next steps for the six priority issues identified by the Action Team and Puget Sound Council for the 2001-2003 biennium. The six priority issues are to:

- Clean up contaminated sediment sites.
- Preserve and protect nearshore habitat.
- Protect and restore salmon, groundfish, forage fish and other species at risk.
- Make shellfish beds safe for harvest.
- Develop effective stormwater programs.
- Help ensure that on-site sewage systems work.

A more limited review of successes and challenges related to other aspects of the ongoing work to protect and restore Puget Sound follows the discussion of these priorities. A final section of maps provide summary information about successes observed in each of five regions of Puget Sound.

Action Team support staff have compiled more detailed information about recent years' successes and challenges, including the annual progress and accomplishment reports of the Action Team agencies and summaries of successes and challenges for each of the programs of the Puget Sound management plan. This information is available on request from the Action Team.

Mohsen Kourehdar, Department of Ecology

PRIORITY:
Clean Up Contaminated Sediment Sites

Issue: More than 5,000 acres of Puget Sound have levels of sediment contamination that poison marine life.

▶ Successes:

Federal and state agencies and responsible parties cleaned up contaminated sediment sites and identified other sites for cleanup in the future.

- Under an agreement between the Department of Ecology (Ecology) and the Georgia-Pacific Company, the company covered five acres of highly contaminated sediments in a former log pond on Port of Bellingham property. Workers covered the contaminated pond with a three- to10-foot layer of clean dredge material to cap, or contain, the contamination.

- A contractor to Ecology, the Port of Olympia and the Cascade Pole Company excavated 32,000 cubic yards of creosote and pentachlorophenol (PCP) contaminated sediments at the Cascade Pole site in Olympia. The contractor stored the excavated sediments in an underground vault on site to prevent recontamination of the surrounding area. The contractors capped the storage site with clean dirt. Eventually, the entire site will be capped with an asphalt or plastic liner cap.

- The Department of Transportation (WSDOT) ranked contaminated sites on the department's property for cleanup. The department targeted and sought funding to clean up 11 high- and medium-risk sites in the future. WSDOT determined risk levels after evaluating which sites might cause contamination to spread further into the environment.

Federal and state agencies developed new tools for managing contaminated sediment sites.

- The Action Team, the departments of Natural Resources, Fish and Wildlife, Transportation and Ecology, tribal governments and federal and local partners adopted the Bellingham Bay Comprehensive Strategy. The strategy will guide future decisions on control of pollution sources, cleanup and disposal of polluted sediments, restoration of habitat, and in-water and shoreline land uses from a baywide perspective.

- Ecology issued a supplemental environmental impact statement on new disposal alternatives in Bellingham Bay for the disposal of about 800,000 cubic yards of contaminated sediments.

- For the first time, technical and feasibility reports commissioned by a team of state and federal agencies, lead by the U.S. Army Corps of Engineers (Corps) and Ecology, identified a preferred option for a multi-user site to dispose of an estimated 10 million cubic yards of highly contaminated sediments during the next 20 years. Existing facilities, such as the Roosevelt Regional Landfill in Klickitat County, meet most of the criteria for a multi-user disposal site and

Fish are making a comeback in Eagle Harbor

Sediment cleanup makes a difference for Puget Sound marine life. In picturesque Eagle Harbor on Bainbridge Island, fewer fish are developing liver problems and more fish are showing up near the site of the old Wyckoff wood-treatment plant. Scientists credit a major cleanup effort underway as the reason for the good news.

A National Marine Fisheries Service study of the site showed that capping the contaminated sediments significantly reduced exposure to polycyclic aromatic hydrocarbons (PAHs.)

In 1993, the U.S. Environmental Protection Agency (EPA) designated the old Wyckoff creosote plant as a Superfund site. To solve the contaminated sediment problem, EPA worked with the Corps to place nearly half-a-million cubic yards of clean sediment over the most contaminated portions of Eagle Harbor to contain and stop the spread of pollutants in the sediments.

Since the capping, fewer starry flounder and English and rock sole are developing sick and abnormal livers.

"The capping clearly improved habitat and reduced health risks for human and marine species alike. It was a great solution. Not only are there more fish, they're healthier," said Ken Marcy, project manager for the EPA and the Wyckoff cleanup site.

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have recently reduced disposal costs for contaminated sediments. The management agencies will track future costs associated with this disposal option to ensure that they remain cost-competitive with constructing a new in-water or upland confined disposal site. The reports also recommended a public-private enterprise as the preferred management option, if construction of a new multi-user disposal facility is necessary in the future.

- Ecology updated the 2001 Sediment Cleanup Status Report. The report provides information about all the known or suspected Washington state sediment cleanup sites, including 112 Puget Sound sites. It reflects the most recent knowledge about sediment cleanup sites and their various attributes.

▶ Challenges

State agencies lack dedicated funds to cover the public share of cleanup costs and entities involved in cleanup of contaminated sediments sites do not have available disposal alternatives. As a result, the rate of cleaning up contaminated sediment sites in Puget Sound is very slow.

- WSDOT needs a dedicated budget to clean up 11 high- and medium-risk contaminated sediment sites.

Sediment quality standards are dated and should be revised.

▶ Next steps:

- Department of Natural Resources (Natural Resources) or another agency should closely track the costs associated with current disposal options to ensure any rise in disposal costs do not delay cleanup actions.
- State and federal partners should establish dedicated methods to pay for the public share of sediment remediation projects, including treatment of contaminated sediments.
- Ecology should revise the existing standards for marine sediment quality to protect human health and the environment from exposure to contaminated sediment areas.
- Ecology should develop freshwater sediment standards to gauge cleanup needs.
- Natural Resources and other public entities with contaminated sites should remediate contaminated sediment on state lands.

Sediment, *continued*

Toxic contaminants such as PAHs from creosote and other chemicals have been settling in the sediments under the waters of the harbor for decades and persisted well after the wood-treatment plant was forced to close in 1987 for some of the grossest environmental damage some scientists have ever seen in the Puget Sound.

Chemicals from the contamination can make people very sick and wreak havoc on the environment. In 1985, EPA issued a public health advisory that recommended against eating seafood caught in Eagle Harbor. The advisory is still in effect today.

Eagle Harbor was the first location in the Pacific Northwest to use clean dredged material to confine contaminated sediments. The capping occurred in three stages during a six-year period.

The Corps completed the contaminated sediments portion of the cleanup in 2001 at a cost of nearly $100 million.

Ongoing monitoring continues, as does work on the land-based portion of the site to clean up contaminated groundwater and soils.

Action Team photo

PRIORITY:

Preserve and Protect Nearshore Habitat

Issue: Puget Sound's nearshore and marine habitats have experienced significant loss and alteration as a result of development and growth in the region.

▶ Successes

State agencies provided high quality, timely and technologically appropriate information and guidance that helped local governments protect and restore habitat, wetlands and critical areas.

- Ecology helped local governments carry out shoreline inventories and improve planning by providing geographic information based on current and historic aerial photos, drift cells and other resources. Ecology developed a planning tool that uses geographically specific information to evaluate restoration options based on location, type and function of wetlands. A pilot project along California Creek in Whatcom County identified restoration sites based on the ability of wetlands to filter fecal coliform bacteria. California Creek discharges to Drayton Harbor, which is closed to shellfish harvesting because of bacterial pollution. The planning tool indicated that wetlands in some locations removed bacterial contamination better than in other areas. Ecology trained its regional staff to use the tool.

- The Action Team produced an educational video on nearshore processes to aid local governments and shoreline homeowners considering shoreline protection options. The Action Team provided copies of the video to shoreline planners in marine jurisdictions as a tool for educating elected officials, planning commission members, and citizens.

- Ecology, WSDOT and the Washington State Department of Fish and Wildlife (Fish and Wildlife) developed Integrated Streambank Protection Guidelines. These guidelines are part of the Aquatic Habitat Guidelines project. The project will develop a series of documents intended to ensure the consistent application of good science and technical practices for projects affecting marine, estuarine, freshwater and riparian ecosystems.

- Fish and Wildlife staff are finishing a study to evaluate the role of nearshore habitat for salmon production and survival in Sinclair Inlet. The study is finding that nearshore habitat is critical to the survival of juvenile salmon.

- The Department of Community, Trade and Economic Development (CTED) and Ecology trained more than 500 local government planners and elected officials in the use of the most current science information to improve and better protect nearshore and other critical areas such as wetlands, fish and wildlife conservation areas, steep slopes and frequently flooded areas. The agencies provided guidance with examples of how to use the information at the local level and a

Workshops educate, inspire waterfront property owners and others

Bulkheads, riprap and other modifications line one-third of Puget Sound's shoreline as a means to control erosion and keep beaches from washing away.

By observing these structures over time, scientists now understand that these modifications can alter the natural processes of a beach and harm a rich and diverse ecosystem, as well as interfere with important spawning habitat.

Mike Gustavson, a waterfront property owner from Southworth, is looking at his shoreline in a new light after learning more about the nearshore environment at a "Living Along the Waterfront" workshop in Kitsap County last October.

"I learned the importance of keeping water off my bank," said Gustavson. "I also appreciated learning about the applications of native vegetation in landscaping. That is our next big project—planting lots of natural vegetation."

Gustavson, and about 150 other waterfront property owners attending the workshop, learned about the processes and habitats on and near their properties, how their actions can affect those processes and habitats, and new approaches to shoreline protection that may offer alternatives to bulkheads and other traditional means of shoreline protection.

While Gustavson applied what he learned at the workshop to his own property, some landowners attended

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list of best available science references to help local governments.

CTED provided financial assistance to local governments to update Growth Management Act policies and regulations that protect habitat.

- CTED provided $5,431,000 to contract with 208 local jurisdictions statewide to update comprehensive land-use plans, policies and development regulations that protect habitat and other critical areas. CTED awarded contracts to 116 of 125 Puget Sound cities and counties.

Cooperative and coordinated efforts built partnerships, extended funding and strengthened on-the-ground habitat protection and restoration.

- Partnerships and cooperative efforts among federal, tribal, state and local governments and private and nonprofit organizations such as land conservancy groups protected and restored approximately 8,000 acres of nearshore habitat through direct acquisition or conservation easements. Projects to breach dikes resulted in the recovery of another 1,700 acres of tidal wetlands and salt marshes.

Some local jurisdictions strengthened their habitat protection programs by collecting additional information about shoreline habitats.

- The cities of Mukilteo, Bainbridge Island, Port Townsend, Everson, Sultan, Port Orchard, Gig Harbor, Issaquah, Bremerton and Snoqualmie and King, Skagit and Whatcom counties started or completed the initial inventories and assessments of the nearshore environment as the initial phase in updating shoreline master programs.

A coalition of tribal, federal and state governments and business, industry and environmental organizations built a large-scale cooperative effort to protect and restore Puget Sound's 2,500 miles of nearshore habitat.

- The Puget Sound Nearshore Ecosystem Restoration Project (Nearshore Project) started in 1999. The Corps with Fish and Wildlife representing state and local governments jointly lead this cooperative venture—one of the largest habitat restoration and preservation efforts ever conducted in Puget Sound. Many federal, tribal and state governments and business, industry and environmental organizations are partners in the project. The Nearshore Project will identify significant ecosystem problems in Puget Sound, evaluate

potential solutions, and restore and preserve critical nearshore habitat.

- The Action Team, the city of Seattle, and Island, King, Kitsap, Pierce and Skagit counties and the King County Conservation District participated in and provided matching funds for the Nearshore Project to identify habitat problems and recommended solutions to these problems.
- The first phase of the Nearshore Project—a feasibility study—is underway to evaluate what factors cause habitat decline; to formulate, evaluate and screen potential solutions to these problems; and to recommend next steps.

▶ Challenges

Limited staff resources challenged the ability of state government to deliver technical assistance.

- State agencies must balance the need to provide case-by-case assistance to many local governments, groups and individuals against the need to develop new tools that will benefit the entire region.
- Integrating new and existing geographic information system (GIS) data at the local level is expensive, especially data related to habitat inventory. In addition, the geographic scale of information needed for different management tools varies.

The successful appeal of Ecology's shoreline management guidelines to the Shorelines Hearings Board delayed Shoreline Master Program updates for a number of local jurisdictions.

- Lead negotiators for each party in the litigation entered into a mediated process to develop and concur on guidelines revisions.

Due to budget reductions, Action Team agencies postponed further development of the aquatic habitat guidelines project.

▶ Next steps

- State agencies should continue to consult with local partners to better target technical assistance to local governments to update Shoreline Master Programs and integrate them with Growth Management plans and ordinances.
- Action Team agencies should continue to coordinate and seek opportunities to share information and support the

Workshops, *continued*

the workshop just to get more information. William Whiteley, a Suquamish resident for 48 years, said he didn't have a bulkhead and didn't expect to need one. He has attended many workshops relating to natural resource issues in the past and said he was often disappointed to find that many were all theory with little supporting science.

"This program seems to be better prepared and thought out," Whiteley said. "I appreciated the softer approach of assuming that most of us try to do what is right."

"The workshop presenters offered some excellent suggestions and a reasonable amount of evidence that what they are talking about really works." Whiteley added. "I would give the presentation a good recommendation."

Along with the Kitsap workshop for landowners, the Action Team and several partners sponsored three other workshops throughout the Sound, each geared to specific target audiences such as contractors, consultants, planners and regulators. In all, more than 400 people attended the workshops.

development of the Natural Resources Data Portal project led by the state Interagency Committee for Outdoor Recreation to improve the development and accessibility of GIS data and management tools. This project will support agency efforts to improve and provide uniform and consistent data and tools to local, tribal, federal, state and regional agencies involved with watershed, salmon recovery, shoreline and critical area planning and resource management.

Wayne Palsson

PRIORITY:
Protect Salmon, Groundfish, Forage Fish and Other Species at Risk

Issue: Populations of salmon, groundfish, forage fish and orca are declining at an alarming rate. The causes for these declines are varied but include over-fishing, variations in ocean conditions, poor water and sediment quality, and degradation and loss of habitat.

▶ Successes:

State agencies took action to restore and protect species at risk.

- Fish and Wildlife designated three new marine preserves in Puget Sound to protect rockfish and other groundfish species from harvest. Preserves are underwater areas where fishing is curtailed to allow groundfish species such as rockfish a better chance to rebuild. Several species of rockfish are at extremely low populations. The new protected areas are located at:
  - **Zee's Reef** near Fox Island, Pierce County, in South Puget Sound.
  - **Keystone Harbor** and **Admiralty Head,** both on the west coast of Whidbey Island, Island County, in central Puget Sound.
- Fish and Wildlife monitored the status of protected fish in these new areas as well as in other core protected areas in central Puget Sound to document whether the preserve system works to protect and restore species in decline.
- WSDOT corrected fish passage barriers at five locations in the Puget Sound basin resulting in 31 acres of recovered fish habitat. The total construction cost was $1.5 million. Fish and Wildlife continues to monitor the performance of the completed projects and will describe the results in a report expected in the spring of 2003.
- Natural Resources reviewed their aquatic reserve program. Aquatic reserves are unique features or habitat types in specific geographic areas that Natural Resources manages and protects from harm. The agency also asked the public for comments on its draft plan for the aquatic reserve program. The draft plan included:
  - Criteria for setting priorities for designating aquatic reserves.
  - A review and nomination process for potential reserve sites.
  - Allowable uses within and, in some cases, adjacent to reserves.
  - Coordination and consultation with local jurisdictions, state agencies, tribes, non-government organizations and the public.
  - Long-term management objectives and monitoring goals.

Never underestimate the power of volunteers

In the northern Puget Sound, volunteers with the Friends of the San Juans (Friends) are surveying beaches throughout the archipelago to identify which areas are spawning sites for several species of forage fish, including surf smelt, sand lance and herring. These fish are a critical food source for a wide variety of species, including birds, marine mammals and some endangered or threatened salmon stocks. And their numbers are declining.

Mary Masters started volunteering for Friends when she and her husband retired and moved to Orcas Island from the San Francisco Bay Area in January 2002. An environmental engineer by training, Masters said she was looking for ways to get involved in marine ecosystem activities.

"I volunteered because it was an opportunity to do some hands-on work related to protection and restoration," Masters said.

David and Ginger Ridgway, an artist and a homemaker respectively, also live on Orcas Island. They've been involved with Friends for several years.

"We volunteered in 1998-1999 with the citizen shoreline inventory that identifies critical habitats that need further monitoring and protection," David Ridgway said. "Then the survey to locate and map forage fish spawning areas started, and we thought it was a logical progression."

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The Action Team provided a forum to improve coordination among agencies by:

- Organizing quarterly meetings for state and federal agencies, tribes, the Northwest Straits Commission, and university and non-governmental organizations to coordinate actions and policies related to developing and evaluating marine protected areas in Puget Sound.
- Initiating a new marine protected area science group to meet quarterly to allow researchers to share information and improve efficiencies in their work.

Local governments used best available mapping data on forage fish habitat to apply local regulations to protect and restore habitat and species at risk.

- The seven marine resources committees (MRCs), established through the Northwest Straits Initiative and coordinated by Island County (in partnership with the other six MRCs), mapped or are mapping forage fish habitat in their jurisdictions. The maps provided baseline data on surf smelt and Pacific sand lance spawning habitat, and help state and local jurisdictions enforce existing shoreline regulations to protect the small forage fish. The survey information was transferred to habitat characterization maps, which provide an overview of habitat condition in these areas in Puget Sound.

▶ Challenges:

Resource managers do not have adequate information to improve how the state manages forage fish and groundfish resources.

Federal agencies, the Northwest Straits Commission, Action Team agencies, tribes and local MRCs have not evaluated the effectiveness of restoring at-risk species and protecting regionally significant marine habitats, nor have they assessed ways to better manage the marine environment.

▶ Next steps:

- Fish and Wildlife should collect information on the status of ground fish and forage fish species and seek consensus with the tribes in developing management plans for recovering fish stocks with reduced populations.

- Fish and Wildlife should continue to map forage fish, herring and rockfish nursery habitat in Puget Sound to improve decision-making regarding these resources.
- The state should conduct a GIS inventory and habitat analysis of existing marine protected areas to understand the protection currently provided by these reserves and to identify species and habitats that are the least protected.
- State and local agencies should use existing authorities to protect depleted species and their habitats and increase enforcement at existing marine protected area sites.

Volunteers, *continued*

Volunteers involved in the Forage Fish Spawning Assessment Project receive classroom training and field work in the protocols required to conduct scientifically valid surveys. Scientists accompany volunteers on the beach surveys. Currently, 30 Friends volunteers are working on the survey of forage fish. So far they've been to 600 sites on 19 islands and documented 31 sites with forage fish, 18 of which were previously unknown.

When volunteers and scientists complete the survey, scientists at the University of Washington's laboratories at Friday Harbor will analyze the data and compile it into maps, databases and reports. They will then give the maps and data to both the county and to Fish and Wildlife. Local governments will use this scientific data to make shoreline management and planning decisions.

The data the volunteers are collecting actually gets applied to policy decisions to protect the environment.

"The volunteers really feel like they are part of something that matters," said Tina Whitman, environmental programs coordinator with Friends. "Their help is invaluable."

Friends and the San Juan MRC are combining their data about forage fish with a larger, regionally scaled effort in the Northwest Straits led by the Island County MRC. The overall coordinated effort relies on technical expertise contracted from Fish and Wildlife to document surf smelt and sand lance spawning activity in the North Sound seven-county area.

Taylor Shellfish Farms

PRIORITY:
Make Shellfish Beds Safe for Harvest

Issue: Restoration efforts are returning contaminated beds to harvestable status, but these successes are offset by closures caused by population growth and water pollution associated with poor land-use practices.

▶ Successes:

Efforts by state, local, and tribal governments, the shellfish industry and other interests successfully restored shellfish tidelands to harvestable status.

- The Department of Health (Health) upgraded 2,545 commercial shellfish acres to "approved" in five commercial shellfish growing areas.
- Local communities and government agencies continued to carry out shellfish restoration strategies at eight sites in six Puget Sound counties.

Health upgraded its shellfish data management and reporting systems through the following activities:

- Reported water quality conditions for all 85 commercial shellfish growing areas in Puget Sound.
- Identified 14 areas threatened with potential downgrades and another 19 areas with water quality concerns.
- Conducted more detailed analysis of water quality conditions in 43 shellfish growing areas, including trend assessments at 26 sites, and published the findings in the latest *Status and Trends in Fecal Coliform Pollution in Puget Sound Year 2000* report.

Action Team staff advocated for land-use protections that preserve and restore shellfish growing areas through the following activities:

- Provided resource materials to all Puget Sound jurisdictions and met with 55 jurisdictions to promote improved shoreline and growth management measures to protect shellfish and other resources.
- Distributed a new a fact sheet entitled *Stronger Safeguards for Shellfish Beds* to elected officials, planners, growers and other citizens. The fact sheet outlines methods to improve local land-use plans and programs to manage pollution.

We all live downstream

The adage "we all live downstream" helps us to understand and think about the interdependence of life in a watershed and the simple truth that those living and working downstream tend to shoulder runoff and just about anything else that may come from neighboring properties.

Long-time Puget Sound oysterman, Jerry Yamashita, understands this only too well.

For years, this second-generation farmer, whose family roots in the oyster business date to the 1920s, has been at the center of the struggle for clean water in Puget Sound. His shellfish operations in Burley Lagoon on the Pierce/Kitsap county line and Henderson Inlet in Thurston County are perfectly suited to shellfish production.

Unfortunately, the two bays are highly vulnerable to pollution from adjacent land uses and are greatly valued for development by the region's fast-growing population.

The pollution battle in Burley Lagoon has been a back-and-forth struggle for more than 20 years. Health first closed the area to harvesting in 1981, reopened it in 1993, closed it again in 1999 and partially reopened it in 2001.

In Henderson Inlet, the water quality problems have proven more difficult and the solutions even more elusive than the problems in Burley Lagoon. Closures to harvesting shellfish at the head of the inlet in the mid-1980s were followed by additional closures in 2000 and 2001, and water quality trends across much of the inlet continue to worsen.

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- Initiated a project to document the effects of urbanization on shellfish areas and to develop new guidelines for avoiding and mitigating the harm that development can have on the quality of water and habitat in the Sound.

▶ Challenges:

Conditions continued to decline in some shellfish growing areas, resulting in Health issuing a downgrade or harvest restrictions affecting 407 acres.

Communities and government agencies have further work to do to develop comprehensive, long-term measures to preserve watersheds and protect water quality for shellfish harvesting.

- Local governments need to continue to improve their land-use plans to effectively protect water quality in shellfish growing areas.
- Organizations and communities need to provide more education and engage citizens in water quality and shellfish protection issues.
- Limited staff resources and decreasing revenues challenge the ability of local governments to fully use regulatory and funding authorities to protect and restore shellfish beds.

▶ Next Steps:

- Health will work with local governments and others to correct pollution problems in threatened shellfish growing areas.
- Action Team staff expect to complete the urbanization study and publish guidelines for protecting water quality in shellfish areas by the end of 2003.
- Action Team staff will complete the shellfish communications strategy to raise the public awareness and better engaging citizens in shellfish protection.
- Action Team staff and others will work with local governments to strengthen land-use plans and water quality programs for shellfish protection.

Shellfish, *continued*

For Yamashita and other commercial growers, closures spell disaster, and for the larger community, they draw attention to important questions about the region's future.

"Our world is getting smaller as it gets more populated," Yamashita said in a 1999 interview. "We cannot exist at the expense of the other person. Somehow we all need to survive together."

Action Team photo

PRIORITY:
Develop Effective Stormwater Programs

Issue: Stormwater runoff containing heavy metals, oil and grease, organic toxins, bacteria, nutrients and sediment continues to degrade Puget Sound's water quality, streams and wetlands and biological resources.

▶ Successes:

Local governments continued to develop and carry out stormwater management programs.

- Ecology and the Association of Washington Cities surveyed 73 cities and towns and nine counties in western Washington in November 2001. The survey results showed that:
  - ~ Of 66 cities responding, 95 percent have an ordinance or other regulatory mechanism requiring or regulating erosion and/or sediment control, and 71 percent have a process to identify and set priorities for existing stormwater problems.
  - ~ Of the eight counties responding, 88 percent adopted Ecology's *Stormwater Management Manual for Western Washington* or an alternative manual, and 100 percent inspect construction sites for erosion and sediment control.

Ecology used best available scientific information to update guidance that helps local governments design stormwater programs and stormwater treatment systems.

- Ecology issued the *Stormwater Management Manual for Western Washington* in August 2001. The manual contains a number of improvements, including new flow control and treatment standards, new best management practices (BMPs), and a new hydrologic model for estimating the volume and rate of stormwater runoff.
- Ecology and representatives from the American Public Works Association Stormwater Managers Committee developed protocols for reviewing new stormwater treatment BMPs.

WSDOT managed stormwater runoff for transportation projects and maintained its stormwater management facilities.

- Constructed stormwater management facilities along the state highway system in the Puget Sound basin at an estimated cost of $15.3 million.
- Trained and certified more than 1,000 WSDOT and non-WSDOT construction site personnel on erosion control techniques and ways to prevent and respond to accidental spills on site.
- Carried out nine stormwater characterization and performance monitoring projects using BMPs at an estimated cost of $138,000, including research on:

Seattle street gets a stormwater makeover

What if we could build residential streets that...

- Provided drainage improvements and pedestrian amenities?
- Slowed traffic?
- Protected the environment?
- Cost the same as a typical curb, gutter and sidewalk improvement?

Such a street does exist in a neighborhood in the northwest part of Seattle.

"SEA Streets, the Street Edge Alternatives project, does all of the above," said Denise Andrews, Seattle Public Utilities project manager. "And residents love the project. We've monitored stormwater runoff since we completed the project in 2001. The results confirm there's a lot less runoff from this street than from streets with conventional sidewalks and gutters."

SEA Streets is an alternative redesign of an existing street that uses grading, soil amendments and a wide variety of native plants combined with traditional drainage systems to function more like an undeveloped ecosystem. It also provides the amenities neighborhoods want, such as a sidewalk and traffic calming, all at a cost comparable to a traditional curb, gutter and sidewalk.

Continued on next page...

- ~ A test site at the Interstate 5 bridge across Lake Union to measure the quality of runoff from the bridge and freeway.
- ~ Estimating the design capacity of stormwater facilities.
- ~ Infiltration rates related to stormwater ponds.

Action Team staff promoted innovative low impact development (LID) practices through the following activities:

- Action Team staff educated 700 realtors, builders, engineers, local government and tribal planners, and others at two regional workshops with help from area universities, local governments, local master builder associations, EPA Region 10 and Ecology. An additional workshop took place in fall 2002.
- Developed technical assistance materials and a web page that included the following messages: LID practices hold great potential for improving protection of water resources, making communities more attractive and reducing infrastructure costs.
- Produced fact sheets on developing local stormwater programs and provided them to local elected officials and staff.
- Funded three innovative local projects through the Public Involvement and Education (PIE) Fund. The projects included workshops on soil amendments to improve stormwater infiltration and on LID, installing a bioretention garden to show how vegetation can treat and improve the quality of stormwater, producing a video that featured developers explaining their innovative projects, and a series of classes on green building and landscaping to improve water quality.
- Convened an interagency coordination meeting to improve technical assistance.
- Met with representatives from 30 cities and all 12 counties and provided stormwater management and LID information to a total of 73 jurisdictions.

Local governments developed innovative approaches to solve stormwater problems.

- The City of Tumwater adopted a Zero Impact Drainage Ordinance, which allows developers to deviate from building standards when stormwater runoff from a project does not cause off-site impacts.

▶ Challenges

- Ecology postponed reissuing the stormwater National Pollutant Discharge Elimination System (NPDES) Phase I permits for municipalities with populations of more that 100,000 people and for the WSDOT highway system due to significant legal and policy issues.
- Delays in the development of the NPDES Phase II permit program (for smaller cities and land-disturbing activities of more than one acre due to inadequate resources at Ecology) led to some local governments putting off development of their stormwater programs while they wait to see what the new permit will require.
- Local governments often lack public support for local funding measures to develop and support adequate stormwater programs, even though many have created local funding capacity, such as a utility, to ensure adequate, ongoing funding for program activities.
- Studies have shown that conventional practices (such as stormwater retention ponds) do not adequately protect habitat, wetlands and shellfish growing areas, especially when the practices are used to mitigate extensive clearing of forests and additions of impervious surface areas, such as buildings, roads, parking and lawns. Most land development in the basin continues to rely on these practices.

▶ Next steps

- Ecology plans to continue work on municipal NPDES permits in 2003, following the outcome of legal actions, other permitting work, and potential legislative direction.
- Action Team staff, CTED, Ecology, university field agents and others will continue to provide guidance and technical assistance to local governments on developing effective stormwater programs with adequate local funding.
- Local governments should apply for grants and loans to develop programs and to increase public awareness of the importance of programs to manage stormwater and protect water quality. Several opportunities include the Centennial Clean Water Fund, the State Revolving Loan Fund, Section 319 Nonpoint Source Grants Program, the PIE Fund, and Community Development Block Grants.

Stormwater, *continued*

Before Seattle was a city, trees and vegetation captured stormwater, which slowly filtered into the ground and then entered creeks and streams. Most storms did not cause runoff problems.

As the city grew, impervious surfaces such as streets and rooftops sent stormwater speeding towards the creeks, causing flooding and erosion in the rainy season and low creek flows in drier times. Impervious surfaces are paved areas, or even lawns, that do not allow rain water to seep into the ground and replenish groundwater.

SEA Streets design provides drainage that is similar to pre-development conditions. The project reduced impervious surfaces by 11 percent compared to a traditional street. It provides a system of small basins and more than 100 evergreen trees and 1,100 shrubs to filter pollutants and slow and absorb runoff from the street.

"SEA Streets reduced the total volume of stormwater within its 2.3 acre area by an amazing amount—97 percent. The project met its design goal of virtually eliminating stormwater for the level of storms that can be expected to occur every two years," Andrews said.

The Seattle Public Utility plans similar projects on 16 city blocks in 2003. The utility will monitor these projects to keep tabs on how well they handle these new projects for water quality benefits and for stormwater quantity and flow.

- Action Team staff should continue to promote LID practices by developing a book on regional LID case studies and other guidance materials and by helping to further research on LID practices. As we learn more about LID practices, Ecology should incorporate appropriate practices and credits into the region's stormwater technical manuals.

Action Team photo

PRIORITY:
Help Ensure that On-site Sewage Systems Work

Issue: Growing use of on-site sewage systems without coordinated management raises the risk of damage to the environment and the cases of waterborne disease in Puget Sound communities.

▶ Successes:

Coordinated educational efforts resulted in increased public understanding of the potential effects of on-site sewage system use and the need for system maintenance.

- Through its PIE program, the Action Team funded 1,350 public information announcements during Spring 2002 advocating on-site system maintenance by homeowners in the northeast area of Puget Sound.
- Washington Sea Grant program staff conducted 23 workshops that educated more than 2,000 residents and landowners in eight counties about on-site system operation and maintenance.

Industry and regulatory agency professionals gained new technical knowledge and received credentials to comply with the legislature's mandate.

- The EPA published and distributed an updated technical manual—*On-site Wastewater Treatment Systems*—to include new guidance for developing management systems and using new on-sites technology.
- The Northwest On-site Wastewater Training Center in Puyallup trained system designers and inspectors. As a result, the Department of Licensing issued licenses to 114 private sector designers and certified 96 public agency inspectors. An additional 44 designers and 15 inspectors were tested and await licensing or certification.

State and local regulators improved rules and applied new resources to managing on-site sewage systems.

- Health organized an On-site Wastewater Rule Development Committee to revise WAC 246-272. This group, representing the industry, government, and consumer interests is working to complete revisions of the state's rule by summer 2003.
- Seattle-King County Public Health Department increased new construction fees and created a new time-of-sale fee to support more intensive oversight of on-site system operations and maintenance.

North Bay septic overhaul cleans up local waters

Shellfish harvesters in North Bay in Mason County got some good news during the summer of 2002. Health upgraded the shellfish classification of 1,100 acres in the bay, allowing for unrestricted, year-round harvest of shellfish.

The upgrade is a result of a cooperative effort to repair on-site sewage systems in residences in the unincorporated shoreline town of Allyn.

Eleven years ago, septic systems were failing in this area and contributed to a shellfish downgrade from "approved" to "prohibited." In other words, contamination from septic systems contributed to closing the shellfish beds from harvesting.

Shellfish growers sued waterfront property owners, leading to a quick—but temporary—repair of many systems. The following year, Health upgraded the classification of a large portion of the bay from "prohibited" to "conditionally approved," which meant shellfish could not be harvested during periods of heavy rain.

In 1994, Ecology approved a wastewater facilities plan for a community treatment plant. The system began operation in 2001 and is designed to serve 1,400 residences. Grants and loans from Ecology and U.S. Department of Agriculture Rural Development program paid for most of the approximately $22 million project. Average monthly rates to repay the

Continued on next page...

- The Tacoma-Pierce County Health District staff developed proposed rule changes aimed at increasing the effectiveness of the agency's operation and maintenance oversight by focusing on higher-risk systems.
- Fish and Wildlife conducted a shellfish auction at Willapa Bay to provide initial funding for a shellfish-on-site grant program. This program, administered by the Action Team, will fund repairs and improvements to failing on-site sewage systems in shellfish growing areas.
- The Mason County Board of Commissioners approved an assessment to support the county's health department and the conservation district's efforts to identify failing on-site systems.

State agencies identified ways to improve the management of on-site systems.

- Health, along with interest groups, completed the work of its On-site Wastewater Advisory Committee, which recommended more than 50 actions to improve the state program.
- Complying with a provision of the 2002 supplemental budget bill, Ecology established a Septage Management Advisory Committee to identify actions needed to improve management and regulatory oversight of septage—the partially treated liquid and semi-solid material contained in a septic or other sewage tank.

Local governments and others used new on-site sewage system technologies to solve wastewater disposal problems.

- In 2001, Mason County constructed a community wastewater disposal system to serve 1,400 homes in North Bay using water reclamation technology.
- Island Wood (formerly the Puget Sound Environmental Learning Center) on Bainbridge Island installed a new kind of treatment facility that treats wastewater to a level where it can be reused for nonpotable applications such as irrigation and to flush toilets. The facility will also serve as an educational tool.

▶ Challenges:

Communities require assistance and resources to create the management structure needed to make effective use of on-site sewage systems as an alternative to community sewer systems.

- Few communities incorporate on-site sewage disposal considerations in their comprehensive plans. As a result, these plans contain little guidance to:
  - ~ Address the potential impacts of large concentrations of on-site systems sited on small subdivision parcels.
  - ~ Provide the land and capital facilities needed to process and dispose of septage generated by these systems consistent with the requirements of the Growth Management Act.
- Few local health jurisdictions developed a plan for active monitoring of on-site systems but rely on more voluntary, educational approaches. The lack of aggressive plans may increase the risk of failure resulting from poor maintenance of the new, more complex on-site sewage treatment devices now on the market.
- No local health jurisdiction in Puget Sound has used the "areas of special concern" section of the Chapter 246-272 WAC to strengthen regulatory action. This section identifies several specific types of areas, such as wellhead protection areas, where designers, installers and system owners must take extra care to keep sewage from contaminating surface and groundwaters. It also authorizes local health agencies to designate additional areas based on their environmental sensitivity.
- Health reassigned funds that once provided tuition subsidies for local health personnel to get necessary training. As a result, some training opportunities were restricted at the Northwest On-site Wastewater Training Center and that limited the center's ability to serve some local health agencies.

▶ Next Steps:

- Action Team agencies should provide technical assistance and guidance to communities on how to incorporate on-site sewage disposal considerations in their comprehensive plans. This guidance should include advice on how to address the potential impacts of large concentrations of on-site systems sited on small subdivision parcels; and provide the land and

North Bay cleanup, *continued*

loan and operate and maintain the system are approximately $48.50 for residential connections and $15 for vacant lots.

"A lot of people worked really hard on this project," said Kim Lincoln, water resources program lead for Mason County Health Services. "It almost didn't happen so many times along the way."

capital facilities needed to process and dispose of the septage generated by these systems consistent with the requirements of the Growth Management Act.

- Health will complete revision of 246-272 WAC during 2003 and seek approval from the Washington State Board of Health in 2004. Health will train local health officials to implement the revised code.
- The Action Team staff and partners will assess the needs of local health agencies' data management resources for on-site sewage systems. This assessment will help state agencies and health districts determine the size and nature of the investment needed to track on-site sewage systems, their maintenance, and their effectiveness in protecting the environment and public health. During the next biennium, the Action Team staff will follow up by assessing in more detail how well local on-site sewage programs are reducing harm to regional water quality. Then, the Action Team will recommend actions to strengthen these programs.
- Ecology will implement actions identified by the Septage Management Advisory Committee that will improve the regulation and beneficial use of septage.
- Washington Sea Grant and Washington State University Cooperative Extension field agents will continue to provide educational opportunities and updated materials on the subject of on-site sewage systems operation, maintenance and management.

Other Programs

Monitoring, Research and Laboratory Support

Issue: Decision-makers at the state and local level need consistent, accurate and informative water quality and natural resource data to make informed public policy decisions.

▶ Successes:

Federal, state and local member agencies of the Puget Sound Ambient Monitoring Program (PSAMP) collected and analyzed environmental data and reported on the health of Puget Sound and its resources.

- The Action Team staff published the *Puget Sound Update 2002: Eighth Report of the Puget Sound Ambient Monitoring Program.* The 150-page report is a technical summary of the findings of PSAMP and non-PSAMP monitoring activities in the region.
- The Action Team staff published and distributed 650,000 copies of the *Puget Sound's Health 2002: Status and Trends of Key Indicators of Puget Sound's Health* report to citizens throughout Puget Sound. This is twice the number distributed in 2000.
- PSAMP agencies collected, analyzed and summarized key data in the following areas:
  - Marine bird distribution and densities.
  - Contaminant levels in fish and associated indicators of fish health.
  - Abundance of groundfish populations, including rockfish and lingcod.
  - Levels of biotoxins in mussels and other shellfish at various locations.
  - Fecal contamination of commercial shellfish growing beds.
  - Intertidal plant and animal life.
  - Distribution and density of kelp and eelgrass.
  - Shoreline modification.
  - Water quality of fresh and marine water systems.
  - Levels of contamination in marine sediments.

Laboratories that support Puget Sound water quality management efforts provided high quality, timely and cost-effective analyses and data.

- Ecology accredited approximately 480 laboratories that follow an approved quality assurance manual and meet data quality objectives.
- Ecology maintained a zero backlog in processing and certifying new applications or renewal of an exiting laboratory accreditation.
- Ecology and Health agreed to carry out one-stop accreditation for 54 laboratories currently covered under both agencies' certification programs. The agencies drafted rules to implement this agreement.

British Columbia and the state of Washington committed to exchange science and management approaches common to the shared marine waters of Puget Sound and Georgia Basin.

- The Action Team and the partner agencies of the Georgia Basin Ecosystem Initiative began planning a top-quality conference to communicate research findings that will ensure the sustainability of the Georgia Basin/Puget Sound ecosystem.

▶ Challenges:

Budget cuts reduced the scope of several monitoring programs that collect and provide information critical to decision-makers, including:

- Marine bird assessments.
- Surveys of harbor seal abundance.
- Evaluations of contaminant levels and health effects in English sole.

PSAMP partners re-assessed the level of effort and desired outcomes of each program to fit with recent budget cuts. PSAMP may no longer be able to collect and disseminate the quality and amount of information critical to decision-makers.

Education and Public Involvement

Issue: Businesses, industry and many residents may be unaware how their practices or individual behavior affects water quality and resources. Education and involvement builds public understanding and support and creates the political will to restore and protect Puget Sound. Education and public involvement are critical to success on all priority issues.

▶ Successes:

Action Team staff increased circulation of key publications, updated its website and added two listservs.

- From July 2001 to June 2002, visits to the Action Team's website increased by 49 percent. The number of documents downloaded increased by 135 percent.
- To provide more timely and efficient delivery of information, at a cost-savings, Action Team staff created two listservs: one for news releases distributed soundwide and one for general Puget Sound water quality and biological health information. As of November 2002, 268 subscribers are on the news release listserv, which is mostly made up of news reporters and 462 subscribers are on the general information listserv.

Action Team staff coordinated and delivered technical assistance on key environmental programs to local government staff and elected officials, tribal agencies and other organizations.

- Action Team staff met with representatives of 55 of 125 city and county jurisdictions, contacted 95 jurisdictions through group meetings and sent mailings to all 125 in the Puget Sound basin jurisdictions to promote implementation of the management plan's stormwater program through Growth Management Act updates.

- Action Team staff met with representatives of 30 of 44 Puget Sound cities with marine shorelines and all 12 counties to promote the integration of the *Puget Sound Water Quality Management Plan* program elements into Shoreline Master Program revisions.

- Action Team staff assisted the local MRCs in seven Puget Sound counties in the Northwest Straits region with outreach programs and local projects.

Action Team staff supported community-based education projects that increased public awareness and created stewardship opportunities through the PIE program.

- Interested groups and citizens submitted 71 proposals to the PIE program to help implement 2001-2003 work plan priorities. A citizen advisory committee selected 12 projects totaling almost $400,000 with an average award of $33,000. Matching funds brings the total to $626,471 for Puget Sound education.

- PIE also funded more than 25 projects targeting work plan priorities and partnership opportunities. In addition, PIE funded small contributions for events such as Salmon Homecoming, larger projects such as printing and placing *Puget Sound Health 2002* in newspapers and aboard ferries, as well as a media campaign on urban sprawl and a derelict gear education project .

- The PIE program piloted a Small Awards program to support projects under $3,000. Thirteen small awards totaling nearly $30,000 financed workshops, signage, displays, field trips for students, AmeriCorps staff, public service announcements and publications to help educate the public about Puget Sound and fulfill work plan related priorities.

Field agents from Washington State University (WSU) Cooperative Extension and Washington Sea Grant programs provided technical assistance to and educated citizens, local governments and businesses.

- WSU Cooperative Extension field agents developed and conducted a series of water quality education courses for developers and real estate professionals in Jefferson County and the south Puget Sound region.
  - In all, 611 real estate professionals participated in these courses.
  - According to a post-course survey, more than 90 percent of the realtors regularly share the information they learned with clientele and colleagues.
- Washington Sea Grant's Education and Public Involvement activities reached a record number of groups in 2001 to 2002. Education about on-site sewage systems reached more than 100 decision-makers in Mason County and other jurisdictions in 2001 to 2002. Through 23 separate educational events the group reached more than 2,000 residents and landowners in eight counties. Kids' Day at the annual OysterFest in Shelton educated nearly 500 fourth grade students about water quality. The annual Kitsap Water Festival taught more than 1,000 children, 50 teachers and 100 parents in fresh and saltwater environmental issues.

- Washington Sea Grant field agents participated in an alternative futures project for citizens in the Chico Creek watershed of Kitsap County. The field agents led a public education program for a watershed-based land-use planning process. The goal of the county's pilot program is to bring about sustainable development through community and science-based management. Additional

partners working with the county include the City of Bremerton, EPA, the Suquamish tribe, the Action Team and others.

▶ Challenges:

- The PIE program was unable to fund many worthy community education and involvement projects. For the current funding cycle, 71 projects requested funding for a total of $2.5 million worth of activities, out of an available $440,000. The program funded only 12 projects—just 16 percent of the requested amount. This continued request for more funds than are available has increased every biennium since the PIE program began in December 1987.
- Action Team staff and water quality field agents are not able to serve all the communities around the Sound due to limited staffing.

Aquatic Nuisance Species

Issue: Unauthorized or accidentally introduced non-native aquatic species in Puget Sound threaten the diversity and abundance of native species, the ecological stability of infested waters and commercial, agricultural or recreational activities that depend on these waters.

▶ Successes:

State and local agencies controlled and eradicated aquatic nuisance species in the Puget Sound basin.

- Department of Agriculture (Agriculture), in partnership with Fish and Wildlife, the Swinomish tribe and the Skagit, Island and Snohomish County Noxious Weed Control Boards, restored 100 acres of nearshore habitat by eradicating invasive spartina cord grass. In the Puget Sound regions, *Spartina alterniflora* infested 790 solid acres of spartina, spread over thousands of acres.
- Ecology provided technical and financial assistance to control and eradicate invasive aquatic plants in the basin's lakes and rivers. Ecology initiated three milfoil eradication projects in Puget Sound area lakes. Ecology started updating the Aquatic Plant Management supplemental environmental impact statement to guide the control of aquatic plant and eradication projects.

Fish and Wildlife engaged in the following activities to prevent the introduction of harmful non-native species to Puget Sound:

- Adopted rules consistent with the *2000 Puget Sound Water Quality Management Plan* that greatly improve how aquatic non-native animals intended for introduction are classified and managed.
- Inspected and worked with the shipping industry and agents representing the industry to improve the reporting of ballast water discharge practices.
- Updated the state *Aquatic Nuisance Species Management Plan* to protect and restore the state's waterways affected by aquatic nuisance species.
- Contracted with the Puget Sound Restoration Fund to coordinate a monitoring program for early detection of the European green crab in Puget Sound. This initiative recruited and trained 66 volunteers, 47 of whom now monitor 48 sites throughout the Puget Sound. In July 2002, the program broadened its efforts by recruiting five tribal governments. Participants in the program

found no green crabs in the Sound. However, green crabs are in Willapa Bay and Grays Harbor estuaries and along the west side of Vancouver Island and threaten to invade the Sound.

State agencies continued to raise awareness about the potential economic and environmental damage caused by aquatic nuisance species.

- Washington Sea Grant contracted with the Action Team staff and worked with diving organizations and the *Northwest Dive News* magazine to recruit and train scuba divers to recognize and report sightings of new aquatic nuisance species in Puget Sound waters.

▶ Challenges:

- Without a new source of funds in the next biennium, Fish and Wildlife will have to eliminate its spartina eradication program. The agency carries out approximately half the spartina control work in Puget Sound.
- Budget cuts at Fish and Wildlife reduced green crab monitoring and control efforts by $100,000 per year. Continuing funding will support monitoring of Willapa Bay and Puget Sound in alternate years.

Puget Sound/Georgia Basin Shared Waters Program

Issue: The marine ecosystem does not recognize international boundaries. Cooperative and coordinated efforts between the province of British Columbia and the state of Washington are necessary to protect these shared waters and resources.

▶ Successes:

The Puget Sound/Georgia Basin International Task Force and member agencies continued to focus on transboundary cooperation through the following activities:

- Conducted a workshop on shellfish and water quality issues in Boundary Bay and Drayton Harbor. Fifty-five people attended the workshop to hear presentations on the problems and develop recommendations for future actions. The organizers produced a volume of proceedings of the meeting which is available in the Action Team library.
- Completed the *Georgia Basin-Puget Sound Ecosystem Indicators Report* that outlines the status and trends of key indicators of the environmental health of the shared waters, including air, water, land and species indicators.
- Planned a Georgia Basin/Puget Sound Research Conference for Vancouver, British Columbia in 2003.
- Developed recommendations to address toxic contamination. The task force will publish the report in 2003.
- Implemented recommendations that address aquatic nuisance species, marine protected areas, nearshore habitat protection and restoration, and comprehensive management of marine species.

Local Watershed Plans

Issue: Local watersheds are the natural scale for planning and analysis and for involving citizens. Integrating all water resource, habitat recovery and pollution protection and control efforts is challenging but is essential for successful local implementation.

▶ Successes:

State agencies and local entities took action to ensure adequate water for people and fish and to protect and restore water quality and habitat:

- Local planning entities, coordinated by Ecology, in 13 of the 19 Puget Sound major watersheds called Water Resource Inventory Areas (WRIAs) carried out critical planning to ensure adequate water for salmon under the Watershed Planning Act (Chapter 90.82 RCW). Local entities also addressed habitat and water quality protection and restoration in nine of these watersheds.
- An Ecology-led committee developed a report for the legislature recommended options to fund and coordinate implementation of watershed plans completed under Chapter 90.82 RCW.
- The 12-county conservation districts in the basin helped landowners solve water quality and habitat-related problems on their property, including those related to protecting and restoring nearshore habitat, removing dikes and restoring estuarine processes.
- Conservation districts participated on shellfish closure response committees and helped landowners implement agricultural practices to protect and restore water quality in shellfish-growing areas.
- Conservation districts built and monitored projects to improve salmon habitat based on limiting factors analysis reports.
- Ecology continued to implement *Washington's Water Quality Management Plan to Control Nonpoint Source Pollution* and provided funding to state agencies to implement the stormwater, habitat, shellfish and on-site sewage system priorities of the nonpoint source plan.
- The Department of Agriculture conducted four events in the basin to collect and safely dispose of waste pesticides and helped individuals identify and dispose of unknown chemical substances.

Local jurisdictions developed new watershed plans under the Puget Sound Local Planning and Management of Nonpoint Source Pollution rule (Chapter 400-12 WAC), and integrated completed plans into new watershed management efforts that address salmon and water.

- The 10 WRIAs in the Puget Sound basin that are addressing water quality or habitat, under the Watershed Planning Act, incorporated work from previously completed nonpoint source watershed management plans
- Ecology awarded Island County a grant to develop a nonpoint watershed plan for Camano Island. This plan will complement the Watershed Management Act plan the county is developing to address groundwater quantity and quality.
- Pierce and Kitsap counties approved the nonpoint plan developed by the Key Peninsula-Gig Harbor-Island watershed planning council.

- The Puyallup River Watershed Council completed a nonpoint watershed plan for the Upper Puyallup watershed.

▶ Challenges:

- To resolve and move forward on watershed priorities, timelines are relatively short to study and address complex issues under the state Watershed Planning Act process. This may result in a less than comprehensive approach to protect water quantity, quality and habitat that will require ongoing coordination and oversight to resolve.
- Local planning entities and the state are challenged to align several different watershed planning and salmon habitat restoration processes that are carried out on different scales around the Sound.
- Additional funding is needed to implement watershed plans.
- State-level staffing limitations reduce the amount of technical assistance available to local agencies and organizations.

Spill Prevention and Response Program

Issue: Accidental spills of oil, gasoline and other hazardous substances are potentially disastrous for people and marine and aquatic resources. Cleanup is costly and rarely can restore the system.

▶ Successes:

A rescue tug at Neah Bay reduced the likelihood of catastrophic oils spills in the Strait of Juan de Fuca and Puget Sound.

- During the state fiscal year 2002, the legislature provided $1.37 million and an additional $1.4 million in 2003 to station a dedicated rescue tug at Neah Bay to provide timely emergency towing services for disabled vessels. The tug also assists vessels with propulsion and steering failures, structural casualties, fires and other problems, and can deploy oil spill response materials. Since the tug was put into service four seasons ago, it successfully aided 19 vessels in distress.

Ecology's vessel inspections and technical outreach helped prevent large spills of oil, gasoline and other hazardous substances from vessels to Puget Sound through the following activities:

- Inspected 535 commercial vessels, 85 more than projected for 2001.
- Updated spill prevention plans for oil handling facilities.
- Updated contingency plans for vessels, facilities and pipelines.
- Carried out public education and technical outreach by expanding the spill website, publishing a newsletter and publishing statistics on vessel transits.
- Added private sector spill response equipment and management systems to improve spill response in the Strait of Juan de Fuca and the outer coast.

Washington Sea Grant Program carried out numerous educational activities to successfully prevent spills and pollution from small vessels and marinas. The program:

- Participated in six fishing vessel safety workshops to deliver spill prevention education to several hundred boat operators and agency personnel.
- Delivered three spill prevention presentations to marina operators, conducted environmental audits of marina facilities and worked with port management to develop oil recycling and spill prevention measures.
- Made presentations on BMPs for marinas to several hundred state and local agency and industry representatives.

▶ Challenges:

- Funding for the Neah Bay rescue tug that assists vessels in distress ran out during the year. The tug program needs a dedicated source of state or federal funding.

Municipal and Industrial Discharges Program

Issue: Improperly or inadequately treated wastewater from municipal and industrial facilities can introduce contaminants into the water column and sediments of Puget Sound that can poison the Sound's marine life.

▶ Successes:

Ecology inspected business and municipality wastewater treatment facilities, issued permits to regulate the amounts of pollutants discharged, and provided technical assistance to wastewater treatment facilities on pretreatment, stormwater and pollution reduction. The agency:

- Substantially updated the 1998 impaired waters list. Submitted the draft policy and list for public comment. The final state list will be delivered to EPA for approval in spring 2003.
- Developed and implemented pollution prevention plans in five large-scale watersheds in Puget Sound.
- Constructed an internal tracking system to manage development and implementation of pollution prevention plans—Total Maximum Daily Loads (TMDLs)—and greatly improved inter-agency coordination.

▶ Challenges:

- Ecology did not update the list of waters with pollution problems required under the federal Clean Water Act on schedule. The department is in the process of obtaining public feedback on the candidate list prior to final submittal.

Marinas and Boating

Issue: Sewage and maintenance wastes from more than 165,000 powerboats, 21,500 sailboats, 45,000 canoes and kayaks owned by Puget Sound citizens and the marinas that moor them are a significant source of pollution.

▶ Successes:

Recreational boaters found more opportunities to properly dispose of sewage.

- The Washington Parks and Recreation Commission (State Parks) placed 13 boat sewage disposal facilities in the Puget Sound basin. In 2001, State Parks' boating program recovered and properly disposed of more than one million gallons of sewage from recreational boats.
- A 2001 State Parks survey of boaters showed:
  - ~ Nearly two-thirds of boat operators reported increasing their use of boat sewage disposal facilities.
  - ~ Boaters cited new and better dockside sewage disposal equipment as the most important reason for increased usage.
  - ~ Almost 40 percent of boaters said their primary source of information on water quality and water pollution was boating magazines and newspapers; 19 percent listed radio and television; and 6 percent listed the Action Team.

Federal, state, local, businesses and private organizations formed partnerships to educate boaters on several important environmental programs.

- State Parks' Clean Vessel Program, in cooperation with federal, state, local and private organizations and businesses, helped fund 14,000 environmental guidebooks, 450 signs about aquatic nuisance species posted at launch ramps , radio spots and information on web pages. The program continues to support Health's Shellfish Program in providing information to the public about the best ways to protect water quality in shellfish growing areas.
- Ecology conducted numerous inspections of boatyards with water quality permits. Some of these site visits were for technical assistance and some were done as compliance inspections. Most of the boatyards are aware of the ongoing problems associated with the stormwater data concerning copper. Ecology plans to issue an updated boatyard water quality permit, in spring 2003. The permit will reflect steps to minimize the discharge of copper to waterways. The regional offices issued several penalties to boatyards for failing to do the required stormwater monitoring.

▶ Challenges:

- To save time and money, many boat owners prefer to clean their boat hulls in the water rather than using haul-out facilities. Few methods are effective in preventing water pollution when a boat's hull is cleaned in the water.

Agricultural Practices

Issue: Agricultural practices that improperly manage animal waste, chemicals, sediments and nutrients are a source of water pollution in Puget Sound.

▶ Successes:

Agriculture continued to manage the pesticide program through the following activities:

- Investigated approximately 100 pesticide use complaints.
- Licensed approximately 25,000 pesticide applicators.
- Scheduled pesticide applicator re-certification and training classes.
- Continued to map crops and determine the risk potential that pesticides may have to salmon under the Endangered Species Act.

Ecology implemented the 1998 Dairy Nutrient Management Act.

- In the past four years, Ecology has helped develop Dairy Nutrient Management Plans for more than 98 percent of dairies in Puget Sound.
- Certified 75 dairies for full implementation.
- Conducted 576 inspections, wrote four permits, and issued three penalties.

▶ Challenges:

- Local funding support for Conservation Districts is limited in some counties and districts rely on grants to maintain basic functions. Adequate funding for districts and access to state grant and loan programs is important for improving farm practices.

Forestry Practices

Issue: Logging practices that increase runoff lead to sedimentation and river bed scouring that can have devastating effects on fish habitat, including habitat for species at risk.

▶ Successes:

Natural Resources began to transfer authority to permit forest practices, on lands being converted to other uses or on lands that are contained within urban growth areas (Class IV-General forest practices permits), to local governments.

- Transferred jurisdiction to Thurston and King counties in the Puget Sound basin.
- Started the process to transfer jurisdiction to Snohomish, Pierce and Kitsap counties and for the cities of Lacey, Bainbridge Island and University Place.
- Started to negotiate potential transfer with Skagit, Whatcom, Island and Mason counties, and the city of Shoreline.

▶ Challenges:

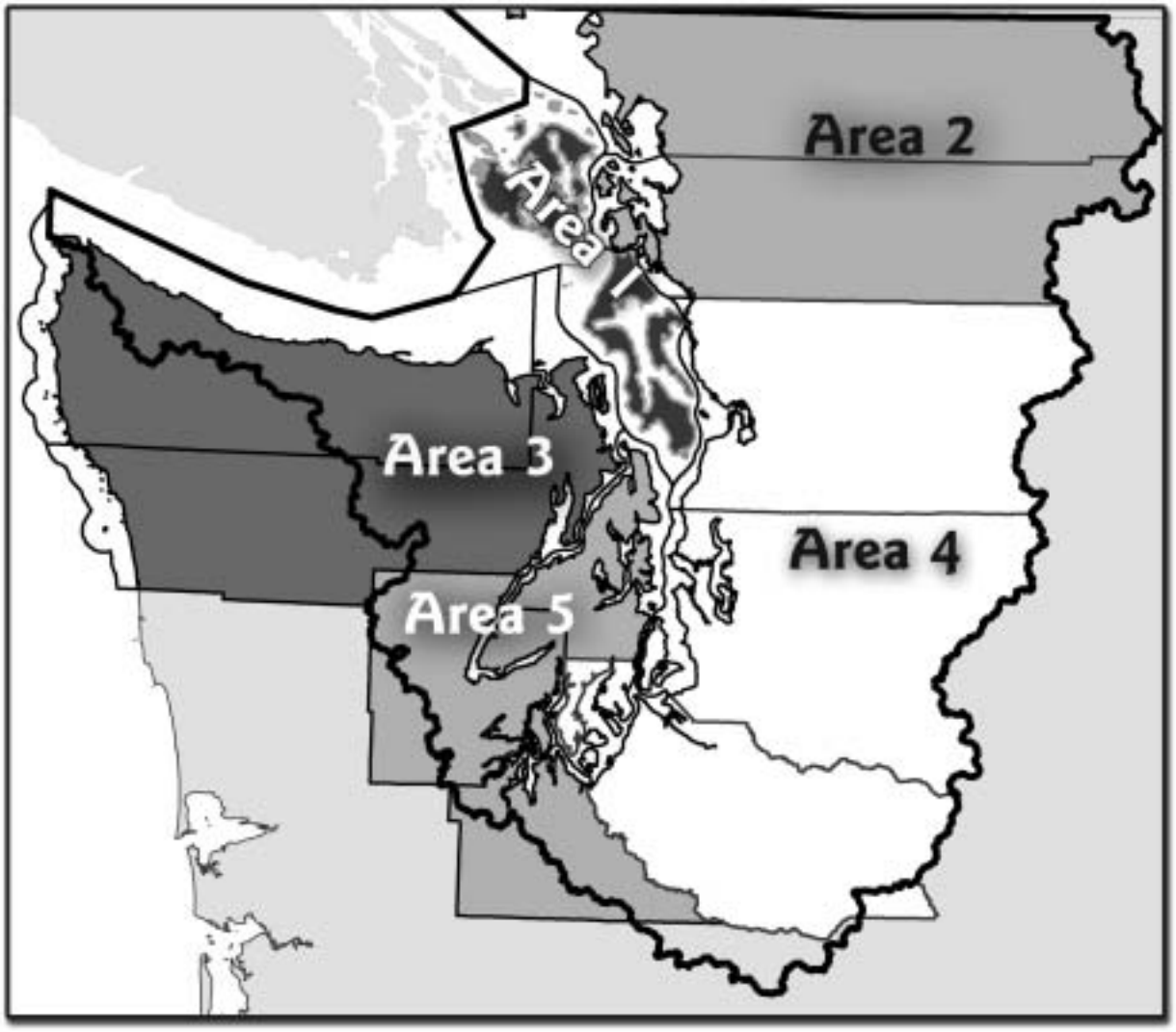
- Because of staffing and funding constraints, many counties are not ready to begin the process to accept transfer of jurisdiction of Class IV-General forest practices.

Conclusions

Early implementation of the *2001-2003 Puget Sound Water Quality Work Plan* provides evidence of a number of successes and challenges as highlighted in this report. The Action Team identifies the following themes—or key findings—from this evaluation of the progress of Action Team agencies, affiliated university programs, and the Action Team support staff in the first year of this biennium:

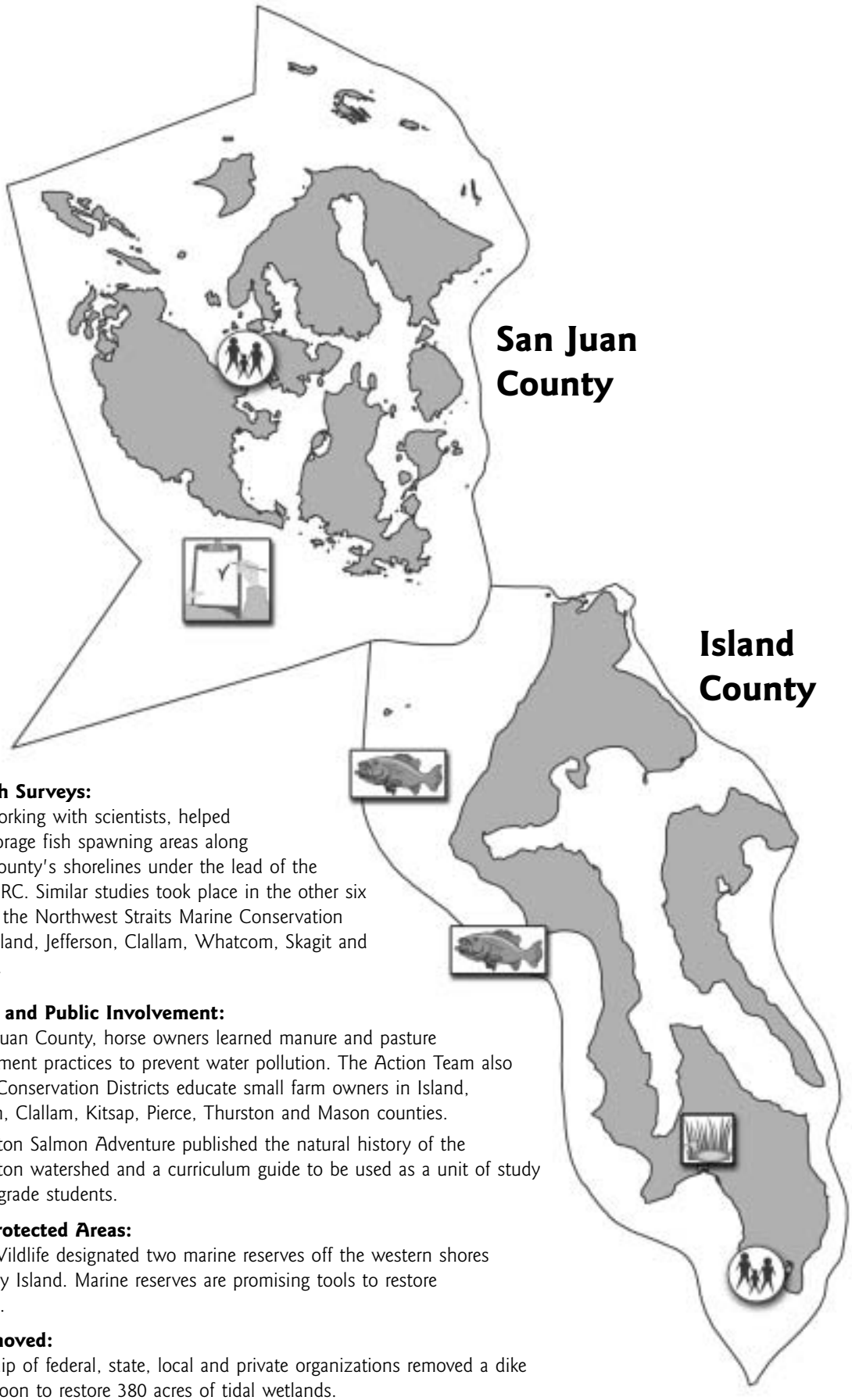
- Funding for work plan activities leveraged other sources of funds and other resources. For example, the Action Team's PIE fund leveraged significant funding and in-kind contributions at the local level.
- Citizens, businesses, institutions, farmers, and others throughout the region are engaged in partnerships and coalitions to effectively protect and restore Puget Sound's health. The people of Puget Sound are stretching limited resources and building successes in their own communities by participating in watershed planning groups, salmon recovery groups, stewardship and interpretive center organizations, and MRCs.
- Local governments cannot always meet state and federal mandates for resource protection due to limited financial resources. State agencies have provided significant financial, technical and political assistance to support, develop and implement city and county environmental programs, but local financial resources are often insufficient to sustain these programs.
- Cities and counties made significant progress in implementing the shoreline and growth management acts, adopting stormwater management manuals and other environmental programs that benefit communities and citizens.
- Action Team agencies continued to collect good quality scientific information to improve decision-making. Research studies and consistent, accurate, understandable and accessible environmental data continue to be critical to inform decision-making and improve our understanding of the ecosystem.

Samples of Success in Puget Sound



The Puget Sound Water Quality Protection Act (Chapter 90.71 RCW) divides the Puget Sound into five geographic regions. On the following pages are examples of some of the successes drawn from this report. They represent a small sample of all the restoration and protection efforts in each area during the 2001-2003 biennium.

Area 1



Forage Fish Surveys:
Citizens, working with scientists, helped inventory forage fish spawning areas along San Juan County's shorelines under the lead of the San Juan MRC. Similar studies took place in the other six counties in the Northwest Straits Marine Conservation Initiative: Island, Jefferson, Clallam, Whatcom, Skagit and Snohomish.

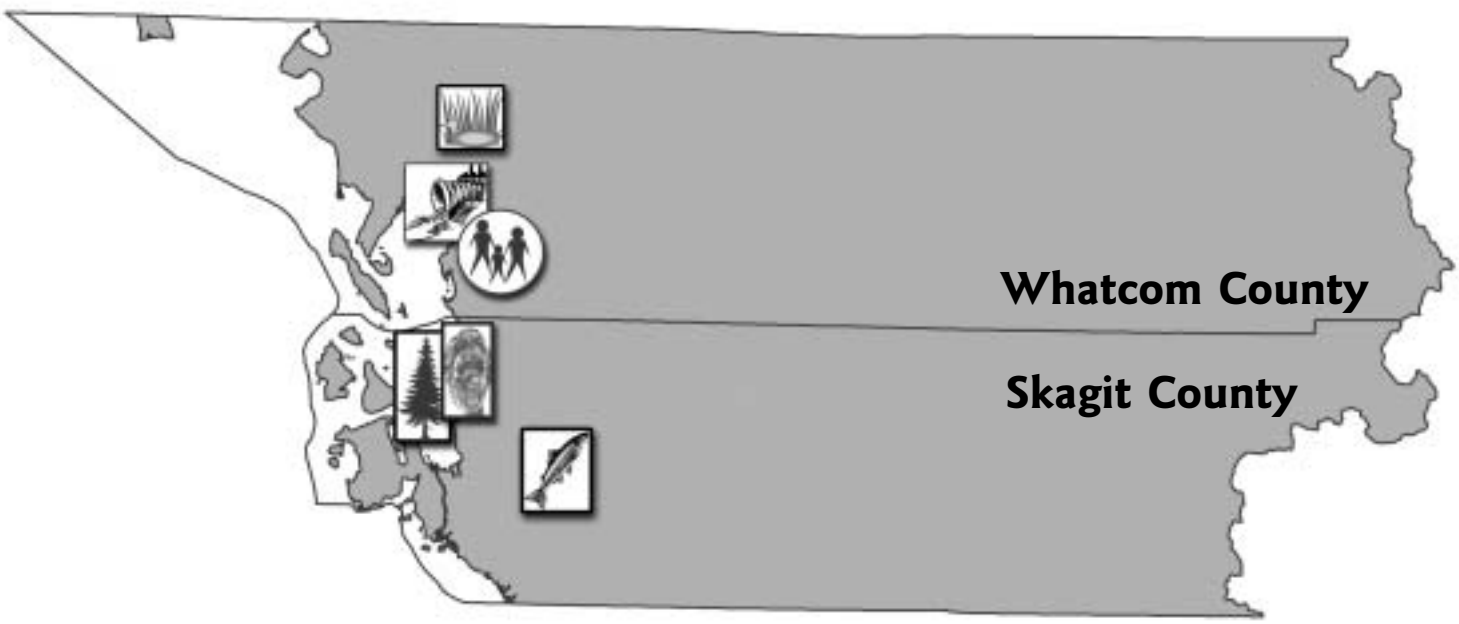
Education and Public Involvement:

- In San Juan County, horse owners learned manure and pasture management practices to prevent water pollution. The Action Team also helped Conservation Districts educate small farm owners in Island, Jefferson, Clallam, Kitsap, Pierce, Thurston and Mason counties.
- Maxwelton Salmon Adventure published the natural history of the Maxwelton watershed and a curriculum guide to be used as a unit of study for 5th grade students.

Marine Protected Areas:
Fish and Wildlife designated two marine reserves off the western shores of Whidbey Island. Marine reserves are promising tools to restore bottomfish.

Dikes Removed:
A partnership of federal, state, local and private organizations removed a dike in Deer Lagoon to restore 380 acres of tidal wetlands.

Area 2



Dikes Removed:
A partnership of federal, state, local and private organizations removed dikes along the lower Nooksack River, re-establishing freshwater wetlands.

Contaminated Sediment Cleanup:
Using clean dredge material, Georgia-Pacific Company covered five acres of highly contaminated sediments in a former log pond in Bellingham Bay as part of a coordinated effort to clean up the bay.

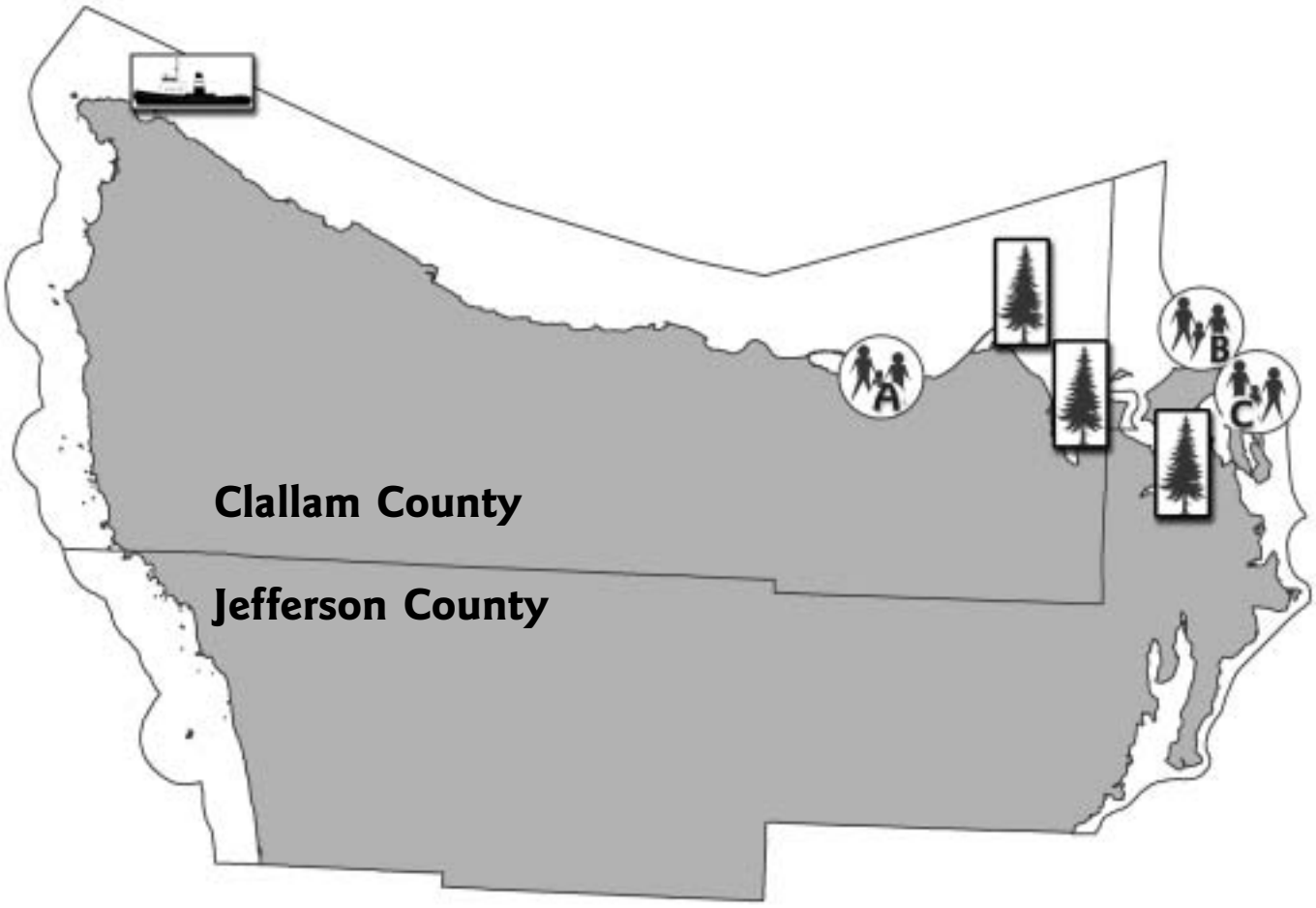
Education and Public Involvement:
The City of Bellingham's *Reining in the Rain* program involved local developers and citizens in demonstrating how LID practices can help builders develop or re-develop property and still protect the quality of water from stormwater runoff.

Shellfish Bed Upgraded:
Health upgraded 350 acres of shellfish-growing area in Samish Bay from "conditional" to "approved" for harvest.

Land Acquired for Preservation and Protection:
A partnership of private groups and federal, state and local agencies preserved 2,800 acres of salt marsh and buffers in Samish Bay.

Fish Passage Barriers corrected:
A WSDOT project resulted in a gain of approximately 9 acres of fish habitat on Bulson Creek near SR 534 in Skagit County.

Area 3



Dedicated Rescue Tugboat:
A rescue tug stationed at Neah Bay reduced the likelihood of catastrophic oil spills in the Straits of Juan de Fuca and Puget Sound. The tug remained on station during the worst weather months of the winter. Funding for the second half of the biennium will ensure that the tug will be there for a minimum of 20 weeks—late fall to early spring.

Land Acquired for Preservation and Protection:
Partnerships of private groups, tribes, local governments and federal and state agencies preserved 670 acres of salt marsh and buffer habitat in the lower Dungeness River, Sequim Bay and the lower Chimacum Creek basin.

Education and Public Involvement:

A. Pacific Woodrush in Clallam County enhanced local residents' awareness and stewardship of Siebert Creek.

B. The Port Townsend Marine Science Center offered marine biology research cruises to visitors who participated in habitat and water quality monitoring.

C. Washington State University Cooperative Extension-Jefferson County is working with realtors, bankers and volunteer watershed stewards to educate new residents on topics critical to watersheds.

Area 4

Education and Public Involvement

A. Seattle Parks and Recreation's "Living Green" workshops and tours of Carkeek Park's new Environmental Program Center promoted LID practices to protect water quality.

B. Through the Pacific Science Center, high school interns monitored the water quality of Taylor Creek in South Seattle and presented lessons about Puget Sound and salmon to 4th and 5th grade students.

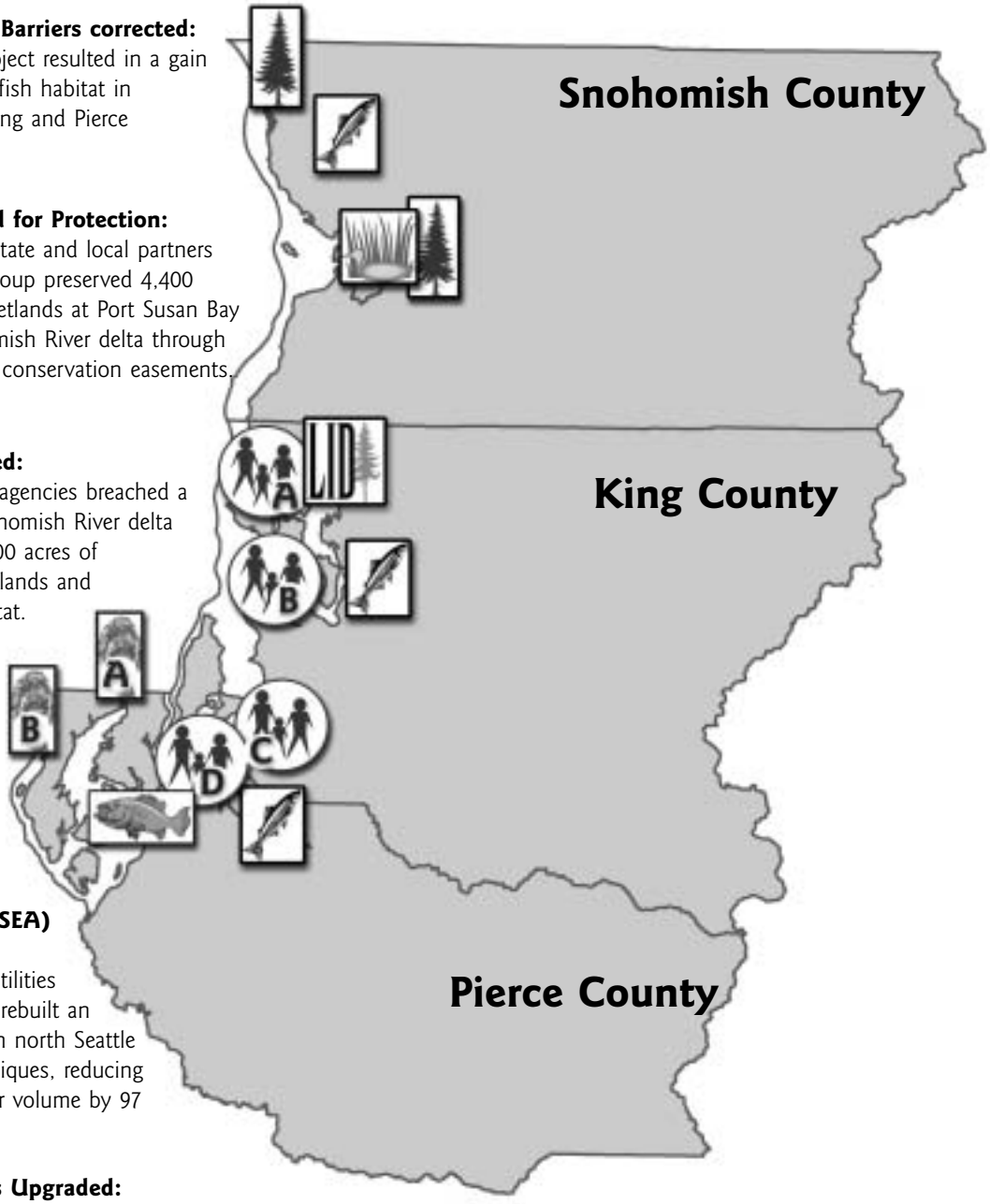
C. The Tacoma Neighborhood Network Center enlisted hearing-impaired community members to participate in hands-on restoration activities on Puget Creek, a small urban stream in Tacoma.

D. Citizens for a Healthy Bay, in partnership with the Foss Public Development Authority and Puget Soundkeeper Alliance, developed and carried out the Commencement Bay Clean Boating and Clean Marina Program in Tacoma.

Fish Passage Barriers corrected:
A WSDOT project resulted in a gain of 21 acres of fish habitat in Snohomish, King and Pierce counties.

Land Acquired for Protection:
Tribal, federal, state and local partners and a private group preserved 4,400 acres of tidal wetlands at Port Susan Bay and the Snohomish River delta through acquisition and conservation easements.

Dikes Removed:
State and local agencies breached a dike in the Snohomish River delta to open up 1,000 acres of saltwater marshlands and freshwater habitat.



Street Edge Alternatives (SEA) Streets:
Seattle Public Utilities redesigned and rebuilt an existing street in north Seattle using LID techniques, reducing total stormwater volume by 97 percent.

Shellfish Beds Upgraded:
Health upgraded two shellfish-growing areas:
A. Burley Lagoon - 110 acres (Pierce County and Kitsap County joint effort).
B. Rocky Bay - 15 acres.

Marine Protected Area designated:
Fish and Wildlife designated Zee's Reef in Pierce county as a marine reserve.

Area 5

Education and Public Involvement:

A. Kitsap County, the Action Team, Washington Sea Grant, Ecology and others sponsored a workshop for waterfront landowners to learn how they can protect their property while also protecting habitat. Two similar workshops took place in Jefferson County.

B. Washington Sea Grant, Kitsap County, the Action Team, EPA and others developed an education and public involvement program to plan alternative land-use scenarios based on analysis of the Chico Creek watershed.

Contaminated Sediment Cleaned Up:

A. Fish health improved significantly following remediation of contaminated sediments from a former creosote plant in Eagle Harbor on Bainbridge Island.

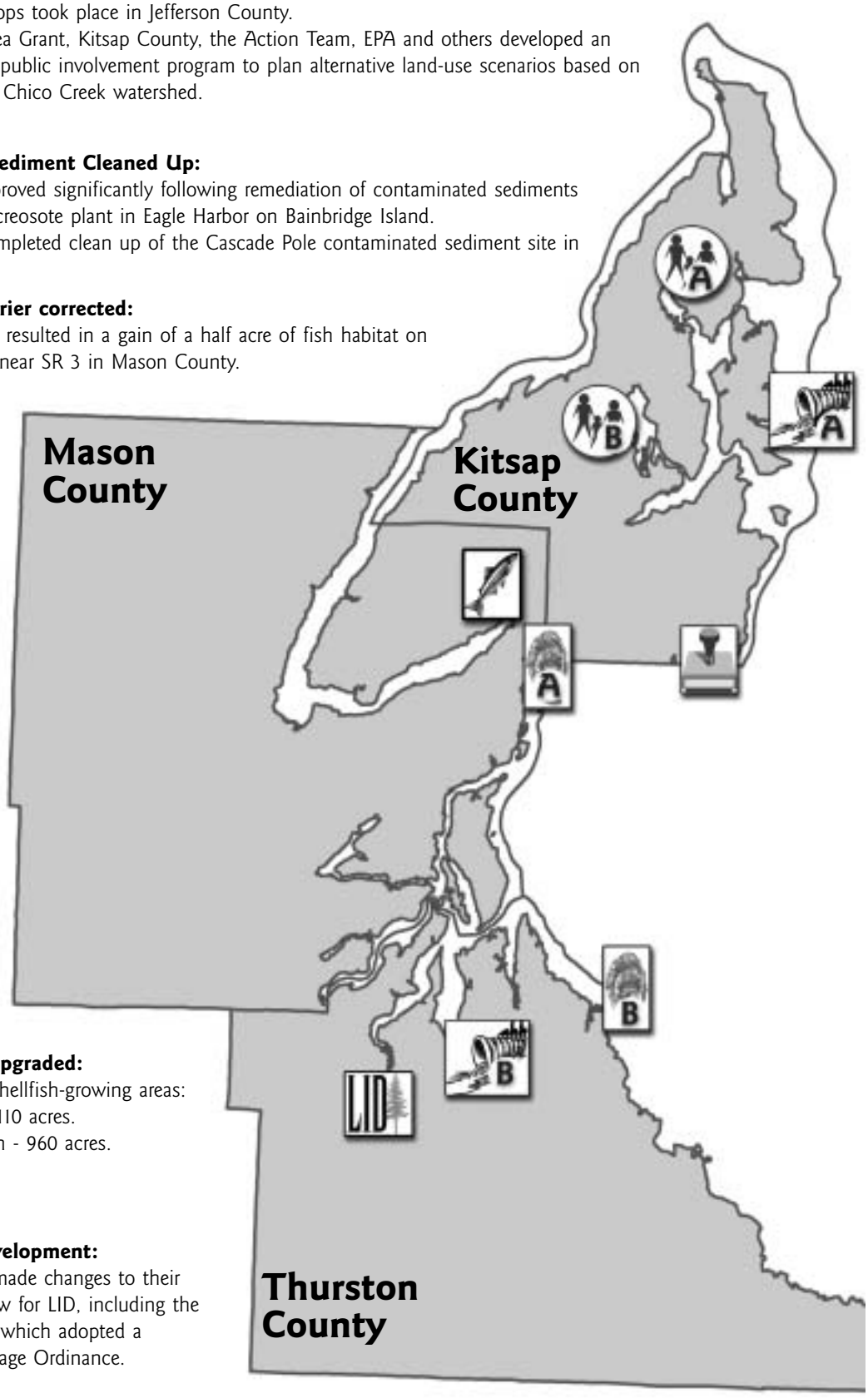
B. Contractors completed clean up of the Cascade Pole contaminated sediment site in Olympia.

Fish Passage Barrier corrected:

A WSDOT project resulted in a gain of a half acre of fish habitat on Sweetwater Creek near SR 3 in Mason County.

Watershed Planning:

Pierce and Kitsap counties approved the nonpoint plan developed by the Key Peninsula-Gig Harbor-Island watershed planning council.



Shellfish Beds Upgraded:

Health upgraded shellfish-growing areas:

A. North Bay - 1,110 acres.

B. Nisqually Reach - 960 acres.

Low Impact Development:

Six communities made changes to their ordinances to allow for LID, including the city of Tumwater, which adopted a Zero Impact Drainage Ordinance.